

Additions to the flora of Rajasthan,

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In this paper 64 species belonging to 49 genera and 25 families are recorded for the first time from Rajasthan. About 12 species new records for "Upper Gangetic Plain" have also been mentioned for the first time from this area and *Ipomoea triloba* Linn. has been recorded for the second time from India.

A perusal of up-to-date literature on the vegetation of Rajasthan reveals that the north-east, north-west and western parts of the state have been intensively investigated so far. Recently, Jain & Kotwal (1960), Vyas & Ramdeo (1964-65), Ramdeo (1965, 66), Gupta (1965a & b, 66), Vyas (1965a & b, 67) and Singh (1970) have added to our knowledge of the flora of eastern part of Rajasthan.

During botanical exploration of south-eastern plateau of Rajasthan (Kotah, Bundi and Jhalawarh districts), I noted that about 64 species have not been recorded from any locality in Rajasthan. These species are enumerated below and each specific name is accompanied by its field numbers, frequency and abundance in the area, habitat with exact locality of occurrence and flowering and fruiting times.

The herbarium specimens are deposited in the Herbarium of National Botanic Gardens, Lucknow.

CRUCIFERAE

Cardamine impatiens Linn. (74007): Rare; found in moist and shady localities near Kotah Dam. *Fl. & Fr.*: October-December.

MALVACEAE

Althaea ludwigii Linn. (91023): Rare; found in dry sandy soils near Atru. *Fl. & Fr.*: December-April.

PAPILIONACEAE

Crotalaria hirta Willd. (90396, 83677): Common; found in waste rocky grounds near Atru and as a weed of cultivation near Bhanimandi. *Fl. & Fr.*: August-October.

C. prostrata Rottl. ex Willd. (83904): Occasional; found in waste rocky lands near Jhalawarh. *Fl. & Fr.*: August-November.

Trigonella incisa Benth. (90927): Common weed of cultivated fields and wastelands near Kotah. *Fl. & Fr.*: January-March.

Trifolium resupinatum Linn. (91062): Rare; found as a weed of winter season crops near Kelwara. *Fl. & Fr.*: January-March.

CAESALPINIACEAE

Phanera integrifolia (Roxb.) Benth. (83711): Rare; found in the forests near Jhalawarh. *Fl. & Fr.*: March-June.

MIMOSACEAE

Neptunia triquetra (Vahl) Benth. (90577): Rare; found in marshlands near Kotah. *Fl. & Fr.*: August-October.

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CUCURBITACEAE

Trichosanthes bracteata (Lamk.) Voigt (74679, 74808, 91064): Common in wastelands; collected from Bundi, Darah and Kelwara. *Fl. & Fr.*: June-October.

UMBELLIFERAE

Seseli diffusum (Roxb. ex Sm.) Sant. & Wagh (91024): Rare; found in drying ponds near Atru. *Fl. & Fr.*: April-May.

RUBIACEAE

Hedyotis hispida Retz. (74801): Common; found in rocky grounds and on the hills near Darah. *Fl. & Fr.*: August-October.

Neanotis montholoni (Hook. f.) Lewis (83675): Rare; weed of cultivation in the vicinity of Bhawanimandi. *Fl. & Fr.*: August-October.

Ixora arborea Roxb. ex Sm. (91066): Rare; abundant near streams in the evergreen forest of Sitabari (Kelwara). *Fl. & Fr.*: January-April.

COMPOSITAE

Lactuca polyccephala Benth. (74750): Rare; weed of cultivated fields near Kelwara. *Fl. & Fr.*: February-May.

Elephantopus scaber Linn. (90842): Occasional; found in shady localities in the forests near Kelwara. *Fl. & Fr.*: August-November.

Adenostemma lavenia (Linn.) Kuntze (90835): Rare; found near Kelwara in still or slow running streams. *Fl. & Fr.*: August-November.

Spilanthes paniculatus Wall. ex DC. (83823): Rare; found in marshy habitats near Jhalarapatan. *Fl. & Fr.*: December-April.

Erigeron multicaulis Wall. ex DC. (90695):

Rare; found in wastelands near Shahabad. *Fl. & Fr.*: August-October.

CAMPANULACEAE

Wahlenbergia marginata (Thunb.) DC. (91027): Occasional; found in grasslands near Atru. *Fl. & Fr.*: February-April.

PRIMULACEAE

Androsace umbellata (Lour.) Merr. (90958): Occasional found in wet and shady places in the forests near Atru. *Fl. & Fr.*: December-March.

CONVOLVULACEAE

Ipomoea triloba Linn. (74692): Rare; found in garden hedges at Bundi. *Fl. & Fr.*: August-November.

I. sepiaria var. *stipulacea* Cl. (83775): Rare; found in wastelands among bushes near Atru. *Fl. & Fr.*: August-October.

I. violacea Linn. (83699): Rare; found among bushes near Eklera. *Fl. & Fr.*: October-January.

Evolvulus nummularius Linn. (74021): Occasional; found in dry, undisturbed grounds near Bundi and Jhalawarh. *Fl. & Fr.*: January-April.

SCROPHULARIACEAE

Bacopa floribunda (R. Br.) Wettst. (83707a): Rare; found in open wetlands near Atru. *Fl. & Fr.*: September-December.

B. hamiltoniana (Benth.) Wettst. (83707b): Rare; found in moist places near Atru village in association with *B. floribunda*. The species can be distinguished from the latter by its sessile flowers. *Fl. & Fr.*: September-December.

Lindernia multiflora (Roxb.) Mukerji (74774, 83726): Occasional; found on the marshy banks of streams and in the rice-fields near Bhonra and Jhalawarh. *Fl. & Fr.*: August-October.

L. verbenaefolia (Colsm.) Pennell (74477): Rare; found in wet localities near Bundi. *Fl. & Fr.*: December-March.

L. anagallis (Burm. f.) Pennell (83742): Rare; found in open wet-lands near Atru. *Fl. & Fr.*: August-November.

GESNERIACEAE

Didymocarpus pygmaea Cl. (74719): Rare; collected from Kotah Dam, growing on exposed rocks and in the crevices of rocks. *Fl. & Fr.*: February-April.

ACANTHACEAE

Nelsonia canescens (Lamk.) Spreng. (90846): Rare; found in wet shady places in the forests near Kelwara. *Fl. & Fr.*: November-March.

Eranthemum purpurascens Wt. ex Nees (83935): Rare; forming an undergrowth in the forests near Darah, Kelwara and Shahabad. *Fl. & Fr.*: January-June.

Hygrophila serpyllum var. *hookeriana* Cl. (90305): Rare; forming dense patches on the sides of Parbati river near Atru. *Fl. & Fr.*: September-December.

POLYGONACEAE

Rumex nepalensis Spreng. (74870): Rare; found along railway-lines near Darah. *Fl. & Fr.*: March-June.

Polygonum limbatum Meissn. (74775): Occasional; found on the marshy banks of rivers; collected from Kotah Dam. *Fl. & Fr.*: May-October.

EUPHORBIACEAE

Tragia cannabina Linn. f. (90806): Occasional; found in wastelands near Chhipabaraut. *Fl. & Fr.*: May-October.

Phyllanthus debilis Klein ex Willd. (90147): Rare; found in cultivated fields and wastelands near Kotah Dam. *Fl. & Fr.*: September-December.

ORCHIDACEAE

Vanda tessallata (Roxb.) Hook. ex G. Don (90840): Rare; found on mango trees in evergreen forests of Sitabari (Kelwara). *Fl. & Fr.*: March-October.

HYPOXIDACEAE

Curculigo orchiodes Gaertn. (83717): Common; found in deciduous forests, especially near Jhalawarh. *Fl. & Fr.*: August-October.

LILIACEAE

Chlorophytum laxum R. Br. (74871): Occasional; found in the crevices of rocks on the hills near Darah. *Fl. & Fr.*: May-August.

COMMELINACEAE

Commelina kurzii Cl. (74601, 90425): Abundant throughout the area on lateritic soils rich in humus. *Fl. & Fr.*: August-October.

C. attenuata Koen. & Vahl (74844): Rare; found on the hill-slopes near Darah. *Fl. & Fr.*: October-November.

C. suffruticosa Bl. (74848): Common on sandy-loam soils throughout the area; abundant near Darah. *Fl. & Fr.*: August-November.

NAJADACEAE

Najas marina Linn. (74497): Rare; found in Telera river near Talera village. *Fl. & Fr.*: September-December.

CYPERACEAE

Cyperus platystylis R. Br. (90843): Rare; found in marshy or aquatic habitats near Kelwara. *Fl. & Fr.*: April-December.

C. diaphanus Schrad. ex R. & S. (83764): Restricted to the sandy beds of Kali Sindh river near Jhalarapatan. *Fl. & Fr.*: August-November.

C. compactus Retz. (90612): Occasional; found in the rice-fields near Kotah. *Fl. & Fr.*: August-November.

Furiema ciliaris (Linn.) Roxb. (83672, 90964): Common; found in aquatic habitats and in the rice-fields; abundant near Atru and Jhalawarh. *Fl. & Fr.*: October-February.

Eleocharis capitata (Linn.) R. Br. (83642): Rare; found in temporary ponds along the roads near Bundi. *Fl. & Fr.*: August-December.

E. palustris (Linn.) R. Br. (74785): Occasional; found in marshy habitats near Atru. *Fl. & Fr.*: December-April.

Fimbristylis falcata (Vahl) Kunth (74764): Rare; found in marshy or aquatic habitats near Kelwara. *Fl. & Fr.*: July-September.

F. ovata (Burm.) Kern (83930): Common in marshlands. *Fl. & Fr.*: August-October.

F. tetragona R. Br. (83706): Frequently found in wet sandy places near Atru. *Fl. & Fr.*: September-January.

Carex cruciata Wahlenb. (74091): Occasional; found in marshy habitats near Hindoli. *Fl. & Fr.*: September-January.

C. heterostachya Bunge (91075): Occasional; found along the banks of ponds near Sitabari (Kelwara). *Fl. & Fr.*: October-April.

GRAMINEAE

Brachiaria decumbens Stapf (74035): Rare; found in moist sandy localities near Bundi. *Fl. & Fr.*: August-May.

B. villosa (Lamk.) A. Camus (74831): Occasional; found in wastelands from plains to the hills; abundant near Darah. *Fl. & Fr.*: August-November.

Digitaria cruciata (Nees ex Steud.) A. Camus (90700): Occasional; found in the shady habitats in the gardens and forests near Kelwara. *Fl. & Fr.*: December-April.

Oryza rufipogon Griff. (83724): Rare; found in a pond near Forest Nursery, Jhalawarh. *Fl. & Fr.*: August-November.

Elytrophorus spicatus (Willd.) A. Camus (83772): Frequently found in sandy, wet soils; abundant near Atru. *Fl. & Fr.*: October-January.

Panicum paludosum Roxb. (83606): Occasional; found in the ponds near Hindoli and Kelwara. *Fl. & Fr.*: October-May.

Oryzopsis aequiglumis Duthie (90520): Rare; found in the ponds and ditches near Kotah. *Fl. & Fr.*: October-February.

Bothriochloa kuntzeana (Hack.) Henr. (74671): Rare; found in sandy soils in the campus of Soil Conservation Demonstration, Research and Training Centre, Kotah. *Fl. & Fr.*: August-December.

Duthie (1903-29) included the present area in his "Flora of Upper Gangetic Plain", but has not recorded the occurrence of plants from these districts. A perusal of literature on the vegetation of Gangetic Plain reveals that following 11 species have not been previously added to the Flora of Upper Gangetic Plain from this locality; these are: *Bacopa floribunda*,

Hygrophila serphyllum var. *hookeriana*, *Phyllanthus debilis*, *Chlorophytum laxum*, *Bothriochloa kuntzeana*, *Oryzopsis aequiglumis*, *Cyperus platystylis*, *C. diaphanus*, *Neanotis montholoni*, *Ipomoea sepiaria* var. *stipulacea*

and *Plantago pumila* Willd.

Further, *Ipomoea triloba* has been recorded for the second time from India. Earlier it was collected from Borivli, Bombay by Fernandes *et al.* (see *JBNHS* 52:661, 1954).

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